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ABSTRACT

Aspects of the perception that assessment is a large-scale testing program conducted at institutional or state levels to determine what students have learned from college is questioned. Small-scale assessments conducted continuously in college classrooms by discipline-based teachers to determine what students are learning in what class are also important. The direct involvement of classroom teachers in the assessment movement is important because: teachers need continuous feedback on learning in the classroom so they may improve teaching effectiveness; continuous feedback is necessary for improvement in teaching and learning; and it is important to know more about how students learn. The two broad categories of feedback provided by students to teachers are: (1) student evaluations of teaching in which they report their observations and reactions to the course and instruction and (2) measures of student learning such as tests and daily assignments. Sources of bias in student ratings of instruction include student, faculty, and course characteristics. Other topics of discussion are consistency and agreement on teaching effectiveness, validity, and the effect of student ratings on instruction. The effect of feedback to teachers on student achievement in the classroom is noted. Conclusions and recommendations include: students provide relatively unbiased, reliable, and valid information; feedback is much more effective in producing change when augmented with consultation; and research is needed on the efficacy of providing teachers with better methods of classroom learning. The topic of colleagues as sources of feedback is considered as follows: feedback from colleagues as peers; feedback from consultants and experts; and self-assessment. Contains 69 references.(SM)

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Feedback In The Classroom: Making Assessment Matter

by K. Patricia Cross

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FEEDBACK IN THE CLASSROOM: MAKING ASSESSMENT MATTER

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Prepared for:

The AAHE Assessment Forum
American Association for
Higher Education

FEEDBACK IN THE CLASSROOM: MAKING ASSESSMENT MATTER

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Most people think of assessment as a large-scale testing program conducted at institutional or state levels to determine what students have learned in college. The purpose of this paper is to question almost every aspect of that perception. I believe that we should be giving more attention to small-scale assessments conducted continuously in college classrooms by discipline-based teachers to determine what students are learning in that class.

The advantage of thinking small in assessment is that the classroom is the scene of the action in education. If the ultimate purpose of assessment is to improve teaching and learning, then the results of a successful assessment must eventually bear directly on the actions of teachers in their classrooms. This means that the feedback from any assessment must reach classroom teachers and be perceived by them as relevant to the way they do their jobs. One way to do that, albeit not the only way, is to start in the classroom collecting assessment data that teachers consider relevant.

This paper then is about the use of information that is -- or could be -- collected in college classrooms with the intention of improving teaching and learning. We know quite a bit from several decades of research about the uses of feedback to improve teaching and learning, and I should like to review that research in the context of the 1980's assessment movement.

Feedback plays different roles in two current modes of assessment that are frequently contrasted as assessment-for-accountability and assessment-for-improvement. Assessment-for-accountability is illustrated in the remarks of Missouri Governor John Ashcroft who chaired the Governor's Task Force on College Quality. He said, "The public has the right to know what it is getting for its expenditure of tax resources; the public has a right to know and understand the quality of undergraduate education that young people receive from publicly funded colleges and universities" (National Governors' Association, 1986, p. 154).

The assessment-for-improvement perspective is expressed by William Turnbull, late president of Educational Testing Service. He wrote, "The overriding purpose of gathering data is to provide a basis for improving instruction, rather than keeping score or allocating blame" (1985, p. 25).

While the ultimate goal of both types of assessment is the improvement of education, feedback is handled quite differently in the two models. In the accountability model, feedback is usu-

ally public, normative, comparative, and competitive. As Governor Ashcroft noted, the public has a right to know, and that implies that they have a right to compare programs competing for funds. Assessment-for-accountability is also "summative" in the sense that it provides a "stop-motion" summary of the situation at any given point in time. The purpose of the information is to demonstrate the effectiveness of the education and ultimately to correct deficiencies.

In contrast, the role of feedback in the assessment-for-improvement model is to provide a continuous flow of information that is useful in shaping the process of teaching and learning while it is in process. This is generally referred to as "formative evaluation," and feedback is most effective if it is <u>not</u> made public and emphasizes competencies instead of comparisons.

A related contrast that I should like to draw in setting the stage for a discussion about using feedback more effectively in assessment is a distinction between what I shall call "direct" and "indirect" models of assessment. Those who, by virtue of their positions, are interested in accountability usually have indirect responsibilities for teaching and learning. That is, they are not on the campus or in the classroom, and must try in whatever ways they can to influence the behavior of those who are in a position to affect teaching and learning. It follows that the further removed one is from the scene of the action in teaching and learning, the more one is dependent on manipulating reward and punishment to bring about desired ends. States manipulate rewards for institutions; presidents manipulate rewards for departments, and department chairs manipulate rewards for teachers.

Without arguing the effectiveness of the indirect model for educational improvement, I want to contrast it with an assessment model that emphasizes direct involvement in the educational process. Classroom teachers are directly involved in instruction. Through their <u>own</u> actions, they can change the quality of teaching and learning in the classroom. For that reason alone, it is important to get teachers <u>as individuals</u> involved in this assessment movement.

Although some faculty members are currently involved in designing or approving assessment programs, they act as representatives of the collective faculty, which is a very different role from assessing their own effectiveness as teachers. It is assumed in most current forms of assessment that if college teachers are made aware that students lack knowledge in subject matter areas considered important, the collective faculty will take steps to correct the deficiency -- usually through making changes in the curriculum or requirements. Virtually ignored is the premise that much of what is taught is not learned.

If we could increase the efficiency of education by reducing the gap between what is taught and what is learned, it would be a remarkable and long-lasting achievement. We need the direct

involvement of classroom teachers in the assessment movement for the following reasons:

1. Teachers need continuous feedback on learning in the classroom so that they may evaluate, experiment, and improve the effectiveness of their teaching and its impact on students' learning.

2. Continuous feedback is necessary for improvement in both teaching and learning. Teachers need to assess learning so that they may provide feedback to students on their progress as learners. And teachers need to receive continuous and accurate feedback on the impact of their teaching on the students in their classrooms, so that they may improve their teaching.

3. Finally, if the improvement of learning is the goal, we need to know more about how students learn. Classroom teachers who know the structure of their discipline and who know -- or should know -- the problems encountered by students in learning it, are in the best position to contribute to knowledge on teaching effectiveness. Research on teaching and learning is moving in the direction of studying cognition and learning <u>in the context of</u> the subject or content taught, and we need the participation of discipline-oriented faculty in assessment and research on teaching and learning so that we may know how to improve the process.

The remainder of this paper is concerned with a review the research on feedback <u>in the classroom</u> to determine its impact on the improvement of teaching and learning. My hypothesis is that the most effective form of assessment is one that is continuous, that occurs as close as possible to the scene of the action in teaching and learning (the classroom), and that provides diagnostic feedback to both teachers and students -- to teachers on how they can improve their teaching, to students on how they can improve their learning.

<u>Framework for Feedback</u>

The possibilities for assessing performance and providing feedback in the classroom may be illustrated by the two-by-two matrix shown in Figure 1.

FIGURE 1.

Recipients of Feedback

Givers of Feedback	Teachers	Students
Teachers	(1) Peer Evaluation/ Consultation	(2) Grades
Students	(3) Ratings of Instruction/ Learning out-comes	(4) Collaborative Learning

The most common feedback on academic performance is that from teachers to students (Quadrant 2). This includes grades at the end of the course, and feedback throughout the semester in the form of written and oral comments on student work.

The second most common form of feedback is from students to teachers (Quadrant 3). Such feedback may be informal and subconscious on the part of the student, for instance, body language showing inattention, boredom, or confusion, or it may be formal and even standardized, as in student ratings of instruction. Increasingly, students' evaluation of teaching is a formal procedure. A recent survey by Peter Seldin (1984) showed that 67.5 percent of more than 600 liberal arts colleges surveyed used student evaluations in evaluating teaching performance -- up from 54.8 percent in 1978.

Another form of student to teacher feedback that is most central to the current assessment movement is feedback on student learning outcomes. Learning outcomes for individual college courses are usually assessed by final exams or term papers at the end of the course. Although such feedback comes too late to do much about improving learning for that term, it may help the teacher in subsequent classes.

A less formal, but equally important form of feedback from students to teachers comes in the form of student responses to assignments and questions posed in class. We don't often think of such information as "assessment." All too frequently, teachers assign work or ask questions, not with the intention of using the feedback to assess and diagnose, but rather to determine whether students have "done the assignment." Assessment via daily and weekly assignments is easily available to every classroom teacher at low cost, but it is undervalued and underutilized in the current assessment movement. Moreover, few teachers know how to design assignments that reveal the outcomes of student learning while the class is in progress.

Unfortunately, perhaps, most assessment of students by teachers and of teachers by students (Quadrants 2 and 3) is currently done in order to make judgments -- what grade to give students, which in turn is used to make decisions about the student's academic future, and what rating to give teachers, which is used to make decisions about promotion and tenure. In either case, assessment becomes adversarial rather than developmental; it is more likely to be used for accountability than for improvement.

The remaining two forms of feedback illustrated in Figure 1. are teacher to teacher (Quadrant 1) and student to student (Quadrant 4). Some teachers invite colleagues to observe and provide feedback on their teaching; the colleague may be a trusted friend or an "assigned" faculty evaluator. Also included in this category are consultants from offices charged with the improvement of instruction and certain technological forms of feedback such as a video tape in which a teacher provides feedback to himself or herself. Finally, student to student feedback is used increasingly in collaborative learning, in student critiques of writing, etc.

Ideally, the feedback in all four cells would be two-way communication. The assessment model currently in use that comes closest to this ideal is probably the program developed by Alverno College in which assessment is considered an inevitable part of the learning process. Individual student learning is the focus of interest, and teachers are constantly looking for indications of progress on the part of learners (Loacker and others, 1986, p. 52).

The major emphasis in this paper will be on the cells that concern feedback <u>to</u> teachers from students and colleagues, that is, Column 1, which includes quadrants 1 and 3. This does not suggest that a paper emphasizing Column 2 would not be useful. It certainly would, but this paper is a review of research on using feedback to improve teaching in the conviction that feedback to teachers on students' learning may be the most efficient and effective route to the improvement of learning. Moreover, there is a need in the current assessment movement for some alternatives to large-scale standardized testing.

FEEDBACK FROM STUDENTS TO TEACHERS.

There are two broad categories of feedback provided by students to teachers: 1) Student evaluations of teaching in which students report their observations and reactions to the course and instruction, and 2) Measures of student learning, such as tests, daily assignments, etc. Of the two, researchers have given more attention to the study of student evaluations of teaching than to classroom measures of learning. Much of this research has been concerned with the credibility of students as judges of teaching performance. Credibility becomes important when student evaluations are used as one bit of information use-

ful in making promotion and tenure decisions. It is also essential if teachers are to benefit from comments about how students respond to teaching. The former use is in the accountability/summative mode of assessment, whereas the latter is in the formative/improvement mode.

Major studies have been conducted over the past decade of the potential sources of bias and the reliability and validity of students as evaluators. By this time, these questions have been extensively studied, with the generally-accepted conclusion that, while decisions regarding promotion and tenure should not be made on the basis of student evaluations alone, students are, as a group, responsible and reliable witnesses to the quality of instruction offered in their classrooms. They can provide information that is useful in improving the quality of undergraduate education, which is the end goal of assessment. Since the results of this research are a necessary, albeit not sufficient, condition for determining the usefulness of student feedback to teachers, a brief review of the findings will be provided.

Three questions dominate the research on student ratings of instruction: 1. Are there sources of bias in student ratings? 2. Are student ratings related to student learning, i.e. do students rate most highly those teachers from whom they learn the most? 3. Are students consistent in their ratings, i.e. are responses reliable and stable over time? At stake in all three questions is the place of student-evaluation information in a program of assessment.

Following a synthesis of the research findings with respect to each of these questions, I shall offer some general observations and recommendations for making better use of students' evaluations of teaching as elements in an effective assessment program (see Page 16).

Sources of Bias in Student Ratings of Instruction.

Almost everything that anyone can reasonably propose as a biasing condition in student ratings of teachers has been studied. Marsh (1980), for example, looked at 16 variables including expected grade, reason for taking the course, class level, course work load and teacher rank, concluding that all 16 variables accounted for only 12 to 14 percent of the variance in student ratings. The major sources of bias can be discussed under three categories: Student characteristics, faculty characteristics, and course characteristics.

1. Student Characteristics: Student characteristics such as gender, grade point average, college year, academic ability, reason for taking the course, personality, and age do not, on the whole, produce significant differences in student ratings of instruction. (Centra, 1977; Costin, Greenough, and Menges, 1971; Centra and Creech, 1976). Centra (1977, p. 97) concludes that "In

general, the research indicates that most extraneous variables have a relatively weak relationship to ratings...."

Of major concern in rating programs used for decision-making is the question of whether students' expected grades in a course lead to lack of objectivity. Frey (1976) found no difference in ratings collected before and after the final examination. Overall, the evidence seems to indicate that students do not "penalize" a teacher whom they think will give them a low grade -- although some studies have shown that students may give lower ratings when they expect a grade lower than usual for them (Centra and Creech, 1976).

For our purposes here it is responsible to conclude that there are not consistent or significant biases related to student characteristics. If bias does appear in an individual classroom, it should be thoughtfully considered by the teacher. For example, if low-ability students are more critical than high ability students, one possible explanation is that the teacher is giving more attention to high ability students. Similarly, since there are not significant differences in the ratings men and women give their teachers (Centra, 1979), teachers finding a gender bias in their classrooms may first look to themselves as the source of the bias.

2. Faculty Characteristics: Over the years, there have been scattered but consistent complaints from faculty that "wit" and "personality" lead to higher-than-deserved ratings. There was a flurry of excitement over the "Dr. Fox" studies of the early 1970's which seemed to show that Dr. Fox -- an actor posing as an instructor with wit and personality but little content -- received higher ratings for effectiveness than did the instructor who presented solid content. Subsequent studies have been unable to duplicate those results, but there is a consistent relationship between student ratings and instructors and "enthusiasm" (Murray, 1985).

The enthusiasm of the instructor almost always shows up in lists of characteristics of effective teachers (Abrami, 1985; Feldman, 1976), but there should be no particular surprise in that. Getting and maintaining the interest and attention of students undoubtedly plays a role in motivation and achievement; as such enthusiasm probably should count as a relevant factor in teaching effectiveness (Murray, 1985). Coats and Smidchens (1966) found that lecture material presented in a dynamic fashion, including gesture, vocal inflection, and minimal use of notes, was recalled significantly better than the same material presented with less enthusiasm.

Feldman (1976) reviewed nearly 60 studies of students' descriptions of effective teachers and found enthusiasm consistently listed among faculty characteristics that received high ratings from students. Other characteristics rated high in most of the studies were concern for students, knowledge of subject matter, stimulation of interest, availability, encouragement of

discussion, ability to explain clearly, and preparation. It is encouraging that these characteristics, perceived by students as important to teaching, are behavioral and subject to change by the teacher. They are, in the terminology of Bloom (1980), "alterable variables," as opposed to "unalterable" characteristics such as race, gender, and age.

Other faculty characteristics -- less subject to change by individual teachers -- that have been studied are years of experience, academic rank, gender, teaching load, and research productivity. None of these characteristics shows consistent or significant relationships to student ratings, with the exception of those related to teaching experience (Centra, 1979). Teachers with three to twelve years of teaching experience are rated somewhat higher than those with either less or more teaching experience (Centra and Creech, 1976). While it is understandable that teachers with little teaching experience might have much to learn, there are implications for faculty development in the findings that teachers with 12 to 20 years of experience may need attention. Boredom, "burn-out," and obsolescence have all been discussed as deterrents to good teaching among experienced teachers.

Ironically, teachers with heavy teaching loads -- more than a 13 credit-hour load -- were given the highest ratings in one comprehensive study (Centra and Creech, 1976). Generally speaking, these teachers are located at community colleges and four-year colleges with a clear teaching mission. While this may suggest that an emphasis on teaching produces results, it also raises a question about the point at which hours in the classroom begin to produce diminishing returns. I was unable to locate any research studies on this topic, which is of major concern to teaching institutions.

Classroom behaviors, in contrast to faculty characteristics, <u>do</u> show significant correlations with student ratings. Behaviors that have been studied are information-giving, stressing important points, giving multiple examples, signaling the transition to a new point, and behaviors aimed at establishing rapport or encouraging student participation, such as asking questions, addressing students by name, and showing concern for student progress (Murray, 1985). Such behaviors have the dual advantages of being alterable and observable. If observation can inform a teacher of weaknesses, then it may be possible to alter the classroom behaviors responsible. This is a finding that has considerable promise for assessment for improvement. When feedback about observable behaviors goes directly to teachers, they may then be able to improve their teaching -- at least as it is perceived by students.

<u>3. Course Characteristics:</u> The major course characteristics that have been studied for possible bias are class size and whether the course is required or elective. There is evidence of a small but consistent relationship between course size and student ratings -- with small classes (fewer than 12 students,

according to Centra, 1977) receiving somewhat higher ratings. But as Gleason (1986, p. 12) notes, "The key is the modesty of the relationship which, depending on the study, accounts for anywhere from one to eight percent of the variance in ratings -- definitely not enough to use large courses as an excuse for low ratings."

Students also tend to give somewhat higher ratings to courses in their majors -- even if required -- and electives. The relationship, however, is once again very modest. Gleason (1986, p. 11) concludes that, "Required courses tend to be rated a little (as in very little) lower than electives."

In comparing thousands of classes across virtually all fields of study, Centra and Creech (1976) found that student ratings of course value and teacher effectiveness were slightly higher in the humanities than in the social and natural sciences. It may be significant that teachers in the humanities are usually somewhat more likely than teachers in other fields to rate teaching as more important to them than research (Parsons and Platt, 1968).

A review of the research on potential biasing factors of student evaluations of teaching should convince most faculty members that students can serve as objective and helpful sources of information about their teaching. Even the small biases that do show up in the research e.g. class size and role in the college curriculum, are related more to global ratings and comparisons with other teachers than to behaviors that teachers can change in their own classrooms.

Before drawing general conclusions about the role of student evaluations of teaching in assessment, it may be helpful to review other research on the usefulness students as sources of information about teaching effectiveness.

Consistency and Agreement on Teaching Effectiveness

The second dimension of student evaluations of teaching that has been investigated extensively is the consistency or reliability with which students evaluate teaching. Centra (1979, p. 26) after studying student evaluations extensively, concludes that, "Their reliability or consistency, as indicated by numerous studies, is very good, providing enough students in a class have made the ratings."

Teachers, especially those who are not especially popular with students, sometimes complain that when students get more perspective and maturity, they will come to value the teaching they received at the hands of a "tough taskmaster." The research offers little support for this rationalization, however. Centra (1977, p.101) concludes that the research on this question clearly indicates that "current students and alumni agree substantially on effective and ineffective teachers." Correlations

of student ratings with alumni ratings hover around .75. It seems to make little difference in overall judgments whether ratings are collected during the semester, at the conclusion of the course, five years later or even ten years later. Since alumni ratings are difficult to get and are of dubious value in providing feedback on current and specific behaviors that have been found most useful to instructors seeking improvement, there would seem to be little point in collecting alumni recollections on the performance of individual teachers. This is not to say alumni follow-up can't be a valuable source of information about curriculum, for instance to provide information about the outcomes from general education and the major.

Another question that arises frequently with respect to the value of student perceptions of teaching effectiveness is the question of whether students know good teaching when they see it. Do they know, for example, whether the instructor is current in the field, and whether they are learning what they need to know about the subject? The answer to that question is that there are people better qualified than students to judge the adequacy of the syllabus, but the research shows that students, faculty, and administrators tend to agree on the identification of good teachers (Blackburn and Clark, 1975; Doyle and Crichton, 1978; Marsh, et. al. 1979; Centra, 1979). Blackburn and Clark (1975) found correlations in the low 60s between faculty, students, and administrators in ratings of instruction. Correlations in other studies ranged generally upward. Maslow and Zimmerman (1956) found a correlation of .69 between colleagues and student ratings within a department, and Murray (1972) reported a correlation of .87 between colleagues and student ratings of 32 teachers. More will be said about the value of feedback from colleagues later, but for now, the point is that the identification of good teachers is not as difficult or as controversial as has sometimes been assumed.

Validity

Validity is the most important question of all. Studies of validity address the question, Do students rate most highly those from whom they learn the most? Most studies do report significant relationships between ratings of teaching effectiveness and student learning. Correlations usually run between .40 and .60, although Dowell and Neal (1982) found correlations ranging from .87 to one negative correlation of .75. Cohen (1981), in a meta-analysis of 41 validity studies of course ratings with student achievement, reported a correlation of .43.

The problem for those investigating the relationship between students' learning and their rating of instruction has been the determination of criteria for how much students learn in the course -- a central issue raised by assessment generally. The usual criteria used in research investigating the relationship between grades and student's ratings of teachers are scores on final exams (for multi-section courses) or some other form of common end-of-course examination. But other criteria such as

value of the course to students and continuing interest in the subject matter have also been used. Centra (1977) found the highest correlations between final exam grades and global ratings of "teacher effectiveness" and "value of the course" to students. The correlation between test scores and ratings of the value of the course to students, for example, were .73 in chemistry and .92 in biology. In contrast, correlations with student perceptions of course difficulty and workload showed the lowest correlations with achievement. Apparently, student perceptions of the amount of work required bear little relationship to the amount learned. While students may take "gut" courses and courses where the workload is light and the grading is easy, there is no evidence that they rate them highly.

Peter Cohen (1981) provides an appropriate summary for this section on what we now know from the voluminous literature on student ratings of instruction. He conducted a sophisticated meta-analysis of 41 studies that met his criteria for inclusion in a statistical synthesis. He concluded that, "We can safely say that student ratings of instruction are a valid index of instructional effectiveness. Students do a pretty good job of distinguishing among teachers on the basis of how much they have learned" (p. 305). While others are less optimistic about the validity of student ratings (Dowell and Neal, 1982), most of those advising caution do so, not on the grounds that teachers cannot get useful feedback from students, but that administrators should be cautious about depending on student evaluation in promotion and tenure decisions. Such advice argues for more attention to the development of assessment for improvement models and suggests caution in the application of assessment for accountability models.

So far in this review of the research, one of the potentially strongest cells of our two-by-two matrix is the one discussed above, representing student feedback to teachers. Students are important sources of assessment and feedback about teaching improvement. They are present in the classroom throughout the semester, on good days and on bad, and no one knows better than students how the teaching affects their learning, motivation, and interest in the subject. If they were trained to be more astute observers of the impact of teaching on their learning, they might prove more helpful than they are now in providing feedback that is useful in the improvement of both teaching and learning. The crux of the matter, however, lies in whether student observations do or could improve teaching, i.e. do teachers change as a result of feedback from students?

Do Student Ratings Improve Instruction?

This question of whether feedback from student ratings improves instruction is, of course, the critical question for all assessors who claim that the purpose of assessment is to improve the quality of education. It should be acknowledged immediately, however, that both rating forms and research have been designed

more for making judgments about teaching than for making improvements. Gleason (1986, p.12) observes that while low ratings may motivate improvement, ratings that rank instructors against each other or measure them against a set of norms, are not specific or descriptive enough to tell faculty what aspects of instruction need to be changed, a problem at the classroom level which manifests itself at the level of state-wide rankings of programs and institutions, as well. Murray (1985, p.22) illustrates the point when he writes, "As things stand now, an instructor who receives poor ratings on global dimensions such as clarity and rapport may have no idea of the specific behaviors that led to these ratings or of the specific changes that need to be made to bring about improvement."

If student evaluations of teaching are to be useful in the assessment-for-improvement model, they will have to be essentially redesigned to provide feedback that is useful to teachers. This may mean a review of criteria suggested in the beginning of this paper, i.e. that feedback for improvement should emphasize competencies and should be non public and noncompetitive. While teachers might be more likely to change their behavior as a result of such feedback, there is still the question of whether they can and do change. We turn to that now.

The research that exists on change as a result of feedback is mixed, but encouraging. Centra (1973a) found that when teachers thought they were doing a better job than their students thought they were doing, they did change, that is teachers who received what they interpreted as criticism in the form of low ratings did make changes, and they did so in as little as half a semester. Centra also found that a wider variety of instructors changed if given more than half a semester of time, and if they were given help in interpreting the feedback. The changes that were most likely to occur were in these areas: preparation for class, use of class time, summarization of major points in lectures or discussion, openness to other viewpoints, and making helpful comments on papers or exams. These are all specific behaviors, subject to change by the instructor.

Murray (1985) reports on two studies that attempted to improve teaching through feedback providing information about specific classroom behaviors. Like Centra (1973b), he reported that teachers who needed to change (i.e. who were ranked low by students) showed more improvement than those who ranked higher, and they showed improvement in as brief a period as six weeks.

There are several explanations for these findings. One is found in dissonance theory (Festinger, 1957), which maintains that change is most likely when the instructor perceives a large discrepancy between self-ratings and ratings by students. The result, according to this theory, is an attempt to restore equilibrium by moving toward closure of self-perception and the perceptions of others. Sullivan (1983) proposes a different explanation, observing that progressing from poor to adequate teaching usually requires the elimination of specific behavioral

weaknesses. This suggests that it is probably easier to move a teacher from poor to adequate performance than from adequate to outstanding teaching. And indeed, that has been the conclusion of most consultants on teaching improvement. In any case, feedback from students would appear helpful to teachers who are not doing well.

The research to date suggests that teachers, in particular teachers who are rated low by students, can improve as a result of feedback alone. Much remains to be done, however, in improving feedback procedures if assessment-for-improvement is the goal. Gleason-Weimer's observations (1987, p.9), unfortunately, still apply to all too many colleges using student evaluations. She writes:

> "Evaluation results (if faculty get them back) are returned via some ... impersonal, albeit efficient method. Generally, results come back to faculty via the mail.... They come with varying amounts of statistical cybernetics to decipher and varying degrees of helpful instructions.... One we know lists all sixty faculty members by the last four digits of their social security numbers and then rank orders them from top to bottom by their overall rating of effectiveness. To be last on such a list is devastating. Being tenth from the bottom is hardly encouraging. And to what end? The comparison may indeed motivate faculty, but if the data do not help them identify specific areas in need of alteration, and if no opportunities to discuss the results are provided, faculty may be motivated to become defensive, not better teachers."

Unfortunately, Gleason's descriptions of the uses of feedback for the improvement of teaching apply all too frequently to the uses of feedback in assessment programs generally. When data collection and quantification become the goals, feedback serves no useful purpose and may even damage the motivation to improve.

The findings here suggest that when the quality of feedback is given attention, implementation is a likely result. Cohen (1980) conducted the seminal analysis on what we know about the impact of student feedback on teaching performance. He located 22 research studies comparing student ratings of instruction under conditions of feedback and no feedback. In a meta-analysis, synthesizing the results of these studies, Cohen concluded that the feedback group received higher end-of-term global ratings in 20 of the 22 comparisons. The improvement was sufficient to place the typical instructor in the feedback groups at the 65th percentile, compared with the 50th percentile of the instructors in the control groups. But even more interesting is his finding that "augmented" feedback, which included consultation about the ratings, resulted in an average increase which placed the teacher at the 74th percentile (in the judgement of students) by the end of the semester. If colleges could raise the performance of teach-

ers from the 50th to the 74th percentile in a semester by using student evaluations augmented by consultation, the result would be a really massive improvement in the quality of instruction, and by inference, in students' learning. This constitutes the strongest possible argument for continuing to work toward an assessment-for-improvement model, through the uses of feedback in the classroom.

Feedback to Teachers on Student Achievement in the Classroom.

I had hoped in this paper to review the research on whether instruction improves as a result of knowledge about student achievement. The assessment movement, after all, is based largely on the premise that if college faculties know what students are and are not learning, they will take steps to improve the situation. There is, however, very little research on which to judge the impact of feedback about student learning outcomes on the improvement of instruction.

In his search of the literature, Cohen (1980) found only three studies that used student achievement measures in feedback experiments. He also located very few studies using student outcome measures such as student perceptions of their learning and student attitudes toward the subject area. In all cases, his meta-analysis suggested that the comparisons favored the feedback groups, but the results were not generally statistically significant. I suspect that the less than significant results are related more to our failure to design strong and useful models of assessment-for-improvement than to the failure of people to respond to concrete suggestions for improvement. I think it is safe to assume that most college teachers want to do the best possible job of teaching. To date, we (researchers, assessors, administrators, and policy makers) have not been very helpful in providing the type of information and feedback on performance that permits teachers to engage in useful self-evaluation. Much work remains to be done in designing better assessment and feedback and in investigating the question of whether and how teachers change their teaching to accomplish greater learning.

For the past two years, I have been speaking and writing about the potential of Classroom Research to inform teachers what students are learning in their classrooms (Cross, 1986; 1987). The potential of Classroom Research to improve practice, however, rests on the assumption that we can devise feedback devices that will provide information to teachers about student learning and that teachers can act on that information to improve learning.

Some of the classroom feedback devices that Tom Angelo and I have described our new handbook on classroom assessment techniques (Cross and Angelo, 1988) solicit the type of student reactions to teaching and course materials that have been discussed above, but we are also trying to develop classroom assessment techniques that inform teachers about student achievements in subject matter learning, critical thinking and analysis, and cre-

ative thinking and synthesis (Section I of the Handbook). The classroom assessment techniques in Section I, for example, are designed to provide continuous feedback to the teacher during the semester (formative evaluation) on how well students are learning to analyze or to "break down" a large topic, question, or problem in order to understand it more fully and manipulate it more effectively. Also included in Section I are suggestions for assessment techniques that provide information about students' abilities to create original intellectual products and to synthesize concepts and ideas from different sources into a coherent whole. The emphasis in the techniques described in the Handbook is on making assessment a part of the everyday activities of the classroom, using assessment in homework assignments, and incorporating assessment devices into teaching methods.

We also think it is important for classroom teachers to get feedback on how students think about themselves as learners and how they assess their own learning skills (Section II of the Handbook). The classroom assessment techniques in Section II address the recent highlighting of the need for students to become <u>involved</u> in the active process of learning. "Metacognition" is the term used to describe students' understanding of their own learning skills, performance, and habits. If teachers had better feedback from students about how students think about themselves as learners, teachers might modify their teaching. Understanding <u>how</u> students engage themselves in the process of monitoring their own learning, for example, should be helpful to teachers in making assignments and designing class experiences to encourage active student involvement. It is one thing to recommend that students be actively involved in learning; it is quite another to suggest to teachers how that can be accomplished.

Unfortunately, most teachers are more concerned about what they, the teachers, are doing than about what students are doing in the classroom. It would be both enlightening and frightening to know just how active student minds are during the typical lecture. Section III of the Handbook which includes assessment techniques designed to provide feedback on student reactions to course materials and teaching methods, is more akin to some of the topics addressed above under student evaluation of teaching.

Our efforts to develop feedback devices that inform classroom teachers about the reactions of students to their teaching -- in terms of achievement, attitudes, and teaching evaluations -- are in the nascent stage of development, but research to date certainly suggests that teachers can improve in response to feedback from students. Certainly, it seems worth the effort to begin the development of feedback devices that will make a difference. Ultimately, I think faculty members will have to form their own networks and to become involved in developing the sort of feedback on students' learning that is most useful in their particular disciplines or to accomplish their particular teaching goals. In the meantime, however, those of us interested in assessment-for-improvement can attempt to illustrate how feedback might be made more useful and more effective.

Conclusions and Recommendations for the Improvement of Instruction Through the Use of Feedback From Students.

1. In general, students provide relatively unbiased, reliable, and valid information about the effectiveness of teaching. Although much of the research has been designed to answer questions about the usefulness of student evaluations for decision-making purposes, the findings are sufficiently positive to suggest that if improvement of teaching is the goal, students can serve as one important source of constructive feedback to teachers in the classroom. Two conditions are helpful in gaining useful feedback: 1) Faculty must consider student evaluations credible and useful, and 2) The information would be even more useful if students were taught to be careful observers of the impact of teaching on their learning.

2. If student feedback is to be maximally useful, student rating forms should be redesigned to stress specific behaviors that are subject to change by the teacher. There should also be provision for teachers to select or add items that are of particular interest to them. Since there is no need for forms used for self-improvement to be standard, teachers should be helped and encouraged to develop their own methods and devices for obtaining feedback.

3. Feedback from students appears most effective for those who need it most -- those who think they are doing a better job of teaching than students think they are doing. Since the discrepancy between self-ratings and student ratings seems to be a motivating factor in change, it may be desirable to encourage self-ratings and explicit comparison with student ratings of instruction.

4. Feedback is significantly more effective in producing change when it is augmented with consultation. Trained consultants should be provided to faculty and their use encouraged.

5. Research is needed on the efficacy of providing teachers with better measures of classroom learning. In particular, attention needs to be given to the development of better indicators of classroom learning and to whether and how teachers use feedback from student achievement measures in the improvement of instruction.

6. Campuses committed to using assessment for improvement should seriously consider a range of methods that utilize feedback from students to faculty.

COLLEAGUES AS SOURCES OF FEEDBACK

The notion of a community of colleagues working together to improve education has strong roots in academe, and many college teachers say they are more influenced by colleagues than by students. Braskamp (1985) found in interviews with 60 faculty members at a large university that "feedback from others was not only used, but sought after." (p. 548). This was especially true for assistant professors where feedback from faculty colleagues carried special weight in the formative years.

Feedback on teaching, however, is a special situation -- seemingly more sensitive and perhaps less useful than feedback on research or other professional activities. There is some question about how colleagues can realistically provide feedback about teaching. In my study conducted at the University of Nebraska in the mid-1970's, I found that teachers were generally reluctant to have colleagues visit their classes. Only 28% were very willing to have colleagues visit their classes, and 42% were hesitant or would object (Cross, 1977). Peer evaluation of class materials, however, is quite acceptable; 47 percent of the Nebraska faculty endorsed it and another 35 percent were "willing to consider it."

There is also the practical question raised by Centra (1979) about how much time colleagues can spend observing classes. Two visits a term by one or two colleagues would seem the maximum that evaluators would be willing or able to give -- unless the evaluator was acting as a friend, consultant, or special adviser. This is the special circumstance under which feedback from colleagues as peers will be discussed here.

Finally, there is the question of whether colleagues possess the necessary skills in observation and consulting to be helpful. Centra (1979, p. 84) observes that, "Little improvement comes from occasional class visits by colleagues or administrators who do not know what to look for or who many not be particularly effective teachers themselves.... On the other hand, observations by skilled experienced colleagues or teaching/course improvement specialists can be extremely useful."

Research and experience with colleagues as sources of feedback on teaching can be discussed under three headings: 1) Colleagues as Peers, 2) Colleagues as Consultants/Experts, and 3) Feedback via Technology. As in the previous section on student feedback to teachers, colleague feedback can be used in both assessment-for-accountability and assessment-for-improvement models. Ironically, it seems that the most rudimentary and superficial colleague assessments (e.g. a single class visit by the dean) are often used for accountability, whereas the more intensive analyses (e.g. team teaching or close friends as consultants) are used in assessment-for-improvement models.

Feedback from Colleagues as Peers.

The use of colleagues as peers in providing feedback depends heavily on trust. It would appear that most such collegial efforts are informal, voluntary, spontaneous, and frequently generated among people who are already friends -- all of which leads to their lack of credibility in assessment-for-accountability, but which may have high potential for use in assessment-for-improvement.

Team teaching in which colleagues work together on planning, teaching, and evaluation is almost always a rich learning experience, and some groups of faculty have extended this by meeting in small groups to explore teaching issues, consider each other's teaching methods, and to discuss teaching methods (Hoyt and Howard, 1978). This approach can be used with or without classroom visitations. Sweeny and Grasha (1978) formalized this procedure by forming "peer development triads" in which teams of three faculty members work together to help each other assess and improve their teaching.

Katz and Henry (Katz, 1987) have developed an intensive and long-term approach to faculty development that combines colleague and student observations with some of the other forms of feedback that were described earlier. In their model, teacher, colleague observer, and students are all working constantly at stimulating greater awareness and knowledge of the teaching/learning process, especially as it is related to the personal development of students. Katz reported that faculty in some 20 institutions where the method has been tried found "a gain in energy and pleasure in teaching, in part because they acquire a surer knowledge of their impact on students and a new colleagueship with other faculty members and with their students" (p. 30).

Other forms of generating feedback from colleagues as peers have required administrative support, often in the form of arranging opportunities, but sometimes requiring financial resources and released time as well.

Peter Elbow (1980) describes a Danforth-supported project in which one faculty member was freed each quarter to spend time visiting faculty members who had volunteered to be visited -- which, according to Elbow, consisted of more volunteers than could be accommodated. Elbow's sensitive description of his experience contains a detailed analysis of how he as visitor approached some sensitive issues in providing feedback on the teaching of a colleague. He concluded that, "What this approach requires is participants who care about teaching and about each other and who are willing to look closely at what they see and to report accurately how they respond. The process is built on trust, but our experience leads us to believe that trust flows naturally from the structure of the procedure -- as long as safeguards are observed" (p.40).

Other models of faculty development that depend on peer feedback cast teachers in the roles of students -- sometimes for one course, sometimes for an entire semester as a student taking a full load of courses. Roy Starling (1987) describes with wit and insight the semester he spent as a student (master-learner) in Rollins College Community of Learners program. His commentary consists of observations not so much on the delivery of classroom teaching as on its perception by students. He wrote, "On certain days, I couldn't wait to return to teaching to put my new-found knowledge to work; on other days, the prospect of trying to fix so much that was broken led me to consider less demanding professions." (1987, p.3). In this particular instance, Starling's feedback took the form of a group of resolutions that he made to himself about how to improve his own teaching.

Some programs in which teachers serve as students also emphasize the importance of feedback from teacher/students to the teachers in whose classes they enroll. The experiment devised by Sheila Tobias in cooperation with the University of Chicago (Tobias, 1986) illustrates this perspective. She set forth the interesting notion that non-science faculty members could provide useful information to science teachers about the difficulties experienced in learning a new subject, especially in science and mathematics. Professors from other disciplines, she reasoned, would have few of the problems sometimes attributed to regular students having problems with subject matter -- youth, lack of confidence, inability to concentrate, etc. The only characteristic these sophisticated learners would have in common with undergraduate students would be naivete about the subject matter.

When two physics professors at the University of Chicago gave demonstrations and lectures to their non-scientist peers, much was learned by both sets of professors. Two levels of feedback were provided -- one during and immediately following the class sessions, and a second in a reflective letter composed anywhere from two days to two months after the experiment. The observations of the non-scientist "students" ranged from insights into their own behavior as learners to newly discovered relationships to their own fields of expertise, to constructive suggestions to the lecturers. One observed, for example, "I was surprised by my reactions to these lectures in the following ways: first, by how very interesting I found what I was able to understand and, second, by how quickly when I failed to understand something <u>immediately</u> my usual feelings of mind-lock, frustration, panic, and helplessness surfaced" (Tobias, 1986, p.38). Another teacher/student found that he lacked the disciplinary perspective to help him distinguish basic concepts from what was being communicated merely for the purpose of illustration. In this instance, feedback to the instructor about the importance of providing a map of the terrain seemed important.

There are few formal studies of whether feedback from colleagues as peers results in changes in teaching. Informal testimonials are often quite impressive -- if the relationship and trust between peers really worked. Many campuses report that the

most valuable consequence of assessment thus far is increased quantity and quality of faculty interaction, cooperation, and discourse about teaching. Most professionals working across a broad range of people and colleges are convinced that feedback from colleagues can be enhanced by a few relatively simple procedures.

Some offices of instructional improvement have prepared outlines to guide the observation of colleagues and make them more useful. (See Centra, 1979, pp.85-89 and Clift and Imrie, 1981, pp. 122-124 for some examples.) Others conduct special training sessions to help guide the observations and consultations (Grasha, 1977). As useful as these may be, there is some evidence that the use of experienced and professional consultants is probably more efficient and effective than the training of non-specialist colleagues. Centra (1979, p. 84) found that "formal or informal colleague assessments are less effective than consultation with expert faculty or work with master teachers." We turn now to the use of feedback from trained consultants.

2. Feedback from Consultants and Experts.

The 1970s was a decade of growth nationwide for offices of instructional improvement. Centra (1976) reported that 41 percent of the four-year colleges responding to his mid-1970s survey claimed "an on-campus person or unit(s) for faculty development or instructional improvement...." (p. 34). Since many people wondered if the fiscal austerity of the 1980s had taken its toll among these college-supported services, Glenn Erickson (1986) conducted a similar survey in 1985. He concluded that, "We have no evidence here to suggest that faculty development is dying" (p. 183). Forty-four percent of the respondents in four-year institutions reported offices of instructional improvement, and 66 percent claimed that their institutions' current investment in faculty development was much or somewhat greater than it had been three years earlier. Among the most frequent services available to faculty under the category of "individual help from a trained consultant" were help with use of instructional technology (66%), interpreting student ratings of instruction (46% -- although 95% of all respondents reported student ratings of instruction were in use on their campuses), developing teaching skills, e.g. asking questions, lecturing (45%), course planning or development (43%), and constructing tests or evaluating student performance (43%).

There is broad agreement in the literature that expert consultation is an important element in feedback to teachers (Centra, 1979; McKeachie, et. al, 1980; Menges and Brinko, 1986; Habel, et. al. 1988), and almost equal agreement on the nature of some basic guidelines. In a nutshell, the recommendations are that the relationship with a consultant must be voluntary, the feedback confidential, and the focus on description and improvement rather than on evaluation and remediation. All of these recommendations carry the familiar earmarks of the criteria for feedback in the assessment-for-improvement model.

It also appears that intensive feedback, coordinated and coming from a variety of sources is more effective than any single effort. Skeff (1983) found that physician/teachers who received intensive feedback (videotaping, plus student and staff ratings, plus a self-assessment questionnaire, plus a one-hour conference with a teaching consultant) were far more likely to rate their experience "definitely beneficial" (75%) than were teachers who received only a single form of feedback (6% to 12% rated it definitely beneficial). Moreover, those receiving intensive feedback were significantly more likely to identify and improve teaching behaviors. These findings suggest that assessment-for-improvement is going to be a more intensive and long-term investment than a one-shot collection of data, followed by committees to make recommendations for improvement. They also suggest that coordinated efforts, orchestrated by an office charged with the responsibility for improving instruction are likely to be more effective than sporadic efforts by volunteers.

Most consultants have learned through experience how to give feedback that is acceptable and useful to teachers. There is relatively little research in education on how to present feedback, although some conclusions from business warrant pondering. Tosti (1978) questions the common wisdom of giving feedback immediately and coupling praise with criticism. He distinguishes between "motivational" feedback and "formative" feedback. Motivational feedback, he contends, should be positive and immediate, whereas formative feedback should be given, not immediately following performance but immediately prior to an opportunity to practice new behaviors.

If Tosti's observations concerning relatively simple tasks in industry (telephone performance of salesmen) apply to the more complex behaviors of teachers in the classroom, it would appear that the best time to conduct formative teaching assessments is <u>during</u> the semester. Most feedback, especially student ratings and student learning outcomes, are available to teachers only at the end of the semester, frequently with at least a summer or semester intervening before the course is taught again. One of the advantages of consultations with experts and peers may be that these typically come during the semester when the instructor can try out new approaches. Since research suggests that evaluations of teaching are generally quite stable after the first few weeks of class, there is little reason for waiting until the end of the semester to gather reactions to teaching (Costin, 1968; Kohlan, 1973).

The Office of Instructional and Management Services at the University of Illinois (1987) recommends that faculty conduct their own "early semester feedback." They suggest four ways of obtaining such feedback: an informal questionnaire (3-12 scaled items plus 1-3 open-ended questions); written comment (3-4 open-ended essay-type questions); a group interview (an educational specialist interviews all or a sample of students in the class during 10-15 minutes of class time; and a question/answer session

(oral questions posed to students during the first or last 10 minutes of class.)

One of the most interesting and creative projects for providing feedback from an office of instructional improvement is one designed by Robert C. Wilson of the University of California at Berkeley (1986). He combined almost all the services that offices of instructional improvement typically perform into an innovative package designated, "Personal Teaching Improvement" (TIPS).

Starting with student ratings of instruction, the office prepares a printout for each instructor of student ratings on each of 24 items in the student rating scale. Special attention is called to the two items rated most descriptive and the four items rated least descriptive of the class.

If the instructor wishes to change low-rated items, he or she is directed to the Teaching Improvement Packet, which is enclosed with the teaching evaluations. This packet consists of sets of suggestions indexed to items on the student rating scale. For example, a teacher who receives low student ratings on an item reading "knowing if the class is understanding you or not" is directed to a four-page flyer offering ten suggestions for what teachers might do to assess the level of students' understanding. Typical of the suggestions are these examples:

1. Assign "minute papers" at the end of some lectures. Minute papers ask students to write their answers to two questions: (1) What is the most significant thing you learned today? and (2) What questions remain uppermost in your mind at the end of today's class session?

2. Call on your students to paraphrase or summarize what you have just said.

3. Encourage your students to form small study groups and send representatives to see you about the difficulties the groups are having.

One of the most interesting features of Wilson's approach is that the suggestions included in the TIPs flyers come from Berkeley faculty members rated especially high on the characteristic. Staff from the teaching improvement office interviewed faculty who received especially high ratings on the student rating scales, asking, "Can you think of anything you do that would lead students to say that it is very descriptive of your teaching that you (the item is inserted here, e.g. explain clearly; know if the class is understanding; encourage class discussion, etc...)." The suggestions, coming from their colleagues in the classrooms at Berkeley, are likely to have high credibility, practical utility, and demonstrated effectiveness. This is an especially intriguing model in which expert consultants combine feedback from students and feedback from faculty colleagues to offer practical suggestions on areas that the teacher needs and wants to work on.

An emerging role for offices of instructional improvement is that of consultant on Classroom Research. The concept of encouraging classroom teachers to collect information about student progress in learning has garnered an impressive array of descriptive nomenclatures recently -- classroom research (Cross and Angelo, 1988), practice-centered inquiry (Chism and others, 1988), course-embedded assessment (Farmer, 1988), and reflection-in-practice (Schön, 1987), among others.

I observe the emergence of three roles for professional consultants in these classroom-based inquiries, each with its own strengths and weaknesses. The first is to provide research services for teachers. In this model, teachers are encouraged to propose experiments and researchable questions that professional researchers can then investigate. Harvard and Syracuse, among others, are currently conducting research illustrating this model. The Harvard Assessment Seminar, for example, is presently conducting research on the effectiveness of different approaches to teaching a course in moral development. Since this is a core course which enrolls some 400 students, research on the most effective ways to teach it are likely to have substantial impact. Bob Diamond, long-time director of the Center for Instructional Improvement at Syracuse University, offers as part of the services of his office, the design and conduct of classroom research proposed by Syracuse faculty.

The advantages and disadvantages of Model 1 are fairly clear. Because the research is conducted by specialists in educational research, it is likely to be competent and credible. The problem is that there is a heavy demand on resources which is on-going because faculty are not being trained to do their <u>own</u> classroom-based inquiry. Moreover, faculty are not necessarily becoming more astute and knowledgeable observers of student learning. They are interested in the results of the research, presumably, but they are not gaining the insights and experience that comes from doing their own classroom research.

Model 2 is a consultative model on classroom research in which teachers are encouraged to develop their own research projects with the help and assistance of experts. This model is currently in use at The Ohio State University and the University of Rhode Island. (See Chism and others, 1987 and Erickson and Erickson, 1988). The consultative model has the obvious advantage of giving faculty "ownership" in the research, and it also scores an advantage in gradually training faculty to do their own research, as well as to become more knowledgeable about matters pertaining to teaching and learning. Experience to date, however, indicates that, at least in the beginning, many faculty propose highly complex and difficult questions that are likely to call for traditional social science research designs which the faculty member is not really qualified to carry out. Discouragement and reinvention of the wheel are possible results.

The success of Model 2 would appear to depend on reaching some happy balance between expert direction on how to "do it

right" and permissiveness to "create your own thing." The reality is that the more directive the consultant, the more it becomes the consultant's project and responsibility, incorporating most of the advantages and disadvantages of Model 1. A permissive, non-directive stance, however, runs the risk of discouragement and disillusionment for faculty who lack the time, background, and expertise to carry out the complex projects that they more often than not design.

I have been experimenting with the development of a third model that I call Classroom Research. It consists of providing some relatively simple tools that classroom teachers, without training in social science research, can use to get started on the systematic observation of student learning in their classrooms. The Handbook of Classroom Assessment Techniques referred to earlier (Cross and Angelo, 1988) is a compendium of 30 teaching/assessment techniques that can be used by teachers in any discipline to get systematic feedback on the impact of their teaching on students' learning. We are also experimenting with a Teaching Goals Inventory (TGI) that helps teachers make their instructional goals explicit and hopefully directs their attention to what to look for in student responses to their teaching (Cross and Fideler, 1988).

We believe that the chief advantage of Model 3 is the gradual training of faculty members to become skillful and resourceful observers of student reactions to teaching as it takes place in their particular discipline. The major disadvantage to date is that sophisticated researchers -- and therefore many faculty members -- are likely to discount the simplicity of the techniques proposed and to regard the proposals for Classroom Research as just one more fad in higher education. Our strategy and our hope is that faculty members will get started by using some of the simple strategies that we offer in the Handbook as examples of what can be done easily and inexpensively in the regular course of teaching. After this general introduction to classroom assessment, we hope that teachers will gradually develop more sophisticated assessment measures appropriate to their own disciplines.

This will entail the development of discipline-based networks wherein teachers may exchange ideas about the assessment of student learning in their particular disciplines. The spinoff from this type of assessment may have implications far beyond the collection of information. Meetings of high school, community college, and university teachers of English in a geographical region may have implications for articulation as well as assessment. Workshops for teaching assistants may encourage the development of classroom assessment techniques that are adopted or modified by professors. Departmental faculties may meet to discuss classroom teaching goals made explicit by some instrument such as the Teaching Goals Inventory (TGI) and then go on to develop appropriate techniques to assess the accomplishment of such goals. At the moment, there is ample room for all three models, and expert consultants need not make choices; they can use the methods that best meet their needs and resources.

In conclusion, both research and experience indicate that teachers can derive considerable benefit from working with colleagues on teaching issues. All indications are that the potentially most profitable partnerships are trained professionals from offices for the improvement of instruction and trusted friends or mentors who are willing to give time and attention to the task. Training faculty members to be more systematic and helpful observers of teaching probably comes in a distant third, and assigning faculty members or administrators to observe classrooms without any special training for the task is probably a dubious procedure that has little to recommend it.

3. Self-Assessment.

Finally, we should look at the potential of self-assessment to provide useful feedback to teachers in their classrooms. The very scanty literature on self-assessment, compared with the voluminous literature on assessment by others, gives testimony to the dominance of interest in assessment for accountability or decision-making over assessment for improvement. Self-assessment is suspect in promotion and tenure decisions because it carries the implication of bias or lack of objectivity -- a conclusion, by the way, that gets some support from the research. Centra (1973b) found that 30 percent of the teachers in a five-college study rated themselves higher than students rated them. And I found in my study of the University of Nebraska faculty that 94 percent of the respondents to a questionnaire about teaching rated themselves "above average" as teachers, and 64 percent judged themselves to be in the top quarter with respect to teaching performance (Cross, 1977).

Despite these findings suggesting that teachers tend to give themselves favorable ratings, there is also some evidence that people do have useful insights into their own performance. Although the teachers in Centra's study used primarily the positive end of the rating scale, they did do quite well in identifying their relative strengths and weaknesses as observed by students. The rank order correlation between the ordering of items by self and by students was .77, indicating that teachers were able to see in themselves, albeit through rose-colored glasses, roughly the same strengths and weaknesses that students saw.

Some offices of instructional improvement have encouraged self-assessment and have developed check lists and self-appraisal forms that help teachers look for behaviors in themselves that are known to affect teaching. Items on the list may be as simple and objective as "Do I explain how final grades are determined?" to as complex and subjective as "Do I try to design the course to meet the needs of students of varying backgrounds and abilities?" When Erickson (1986) conducted his study of the faculty development practices in some 650 four-year colleges, he found that about a third of the respondents reported systematic self-assessment procedures in use on their campuses. That seems surprisingly high to me -- until we compare it with the use of stu-

dent ratings of instruction (96 percent) and classroom observation by peers (64 percent).

Very recently, there has been a resurgence of interest in self-appraisal. It shows up in three distinctive threads in the current literature on education: metacognition, reflection-in-action, and the uses of technology to enable people to observe themselves in action.

The concept of metacognition involves self-observation and self-monitoring of the learning process by the learner. Good learners tend to be conscious of themselves as learners and to be able to observe, direct, and control the learning process. Poor learners, in contrast, are less observant or analytical about the steps or prccedures that they follow in learning (Weinstein and Underwood, 1986; McKeachie and Others, 1986). Since teaching is a learning experience, we might reason that a teacher who is able to analyze the process of learning the complex skills and insights that go into teaching would be in a better position to direct and control the process. What we are learning about metacognition should apply to learning to teach as well as to any other learning task.

A related phenomenon is advocated by Donald Schön (1983; 1986). He believes that the best way to educate people for a variety of professions ranging from architecture to psychoanalysis is through reflection-in-action, which he defines as people "thinking what they are doing while they are doing it" (Schön, 1986, p.xi).

The concept of the "reflective practitioner," which has generated considerable interest in professional circles, has much in common with the concept of metacognition, which has generated a great deal of excitement among educational researchers. Both require learners to observe themselves in action, to become aware of how they process information and learn new skills. Neither Schön nor those interested in metacognition assume, however, that the learner can perform these analyses without expert help. Schön, for example, devotes a great deal of attention to the need for "coaching," and researchers speak of the need for "modeling" and "talking through" the processes of observing oneself in action, whether in the process of learning or in the process of performing professional tasks. At this point, the notion of self-improvement by self-monitoring looks promising. Certainly those designing assessment programs should not rule out the potential of delivering valuable feedback from oneself to oneself.

While there is not much research that can be reported as yet on the more immediate and analytical forms of self observation, such as metacognition and relection-in-action, there is a relatively long experience with using the technology of audio and video recording which permits teachers to observe themselves, if not during the action, then in a faithful reproduction of it.

Videotaping of classes has been one of the services offered by college and university offices for instructional improvement for years. Video playback made its appearance in the mid-1950s when it received its most enthusiastic reception from therapists, athletes, and entertainers. Today, the use of video playback is somewhat controversial in therapy (Fuller and Manning, 1973), but thoroughly familiar to TV spectators who watch intently the slow motion video playback of the sacking of the quarterback. For tennis instructors and golf pros, video playback is the backbone of their instruction.

The use of video has been less spectacular in higher education, but it is an inevitable part of microteaching, which is a basic pre-service training technique for elementary/secondary teachers. Centra (1976a) found that by 1976, 57 percent of the colleges and universities in his sample had video equipment available, but fewer than five percent of the faculty actually used it. Erickson (1986) reported that about half of the four-year colleges used videotaping with critique as a practice in faculty development programs. I don't think these data mean that videotaping is declining in use, but there has been no dramatic spurt in its use, and it has lagged behind such practices as student evaluation of teaching, which jumped from 55 percent used by four-year liberal arts colleges in 1978 to 68 percent by 1983 (Seldin, 1984).

The use of video is controversial, but much of the research and much of the controversy arises around its use in therapy, where it is usually discussed as "self-confrontation." There is a noticeable absence of research on the effectiveness of video playback in faculty development programs. From the research in psychology and what little has been done in higher education, we can draw the following tentative conclusions:

1. Video playback, like any assessment-for-improvement, is probably most useful when the focus is on very specific, alterable behaviors. The more carefully defined the goal, the more likely the change.

2. Since self confrontation is a demanding emotional experience, video playback should be accompanied by experienced consultation.

3. It appears that there are arguments for combining video and audio playbacks. Video is often a dramatic, motivating experience, but change seems not to persist over time. Fuller and Manning (1973, p.492) write that, "listening to one's voice is like being given a little shake, but self-viewing is like a tee-thrattling blow." They suggest that once people have seen a video, they can visualize what is going on from the audio alone. Since audio is easier and cheaper, it can provide continuous feedback that seems to be as effective as the more dramatic video feedback.

4. There is some evidence that video feedback is most effective with secure, self-confident people. Fuller and Manning (1973) compare the teacher most likely to benefit from video playback with the client most likely to benefit from therapy. The most promising client, they say, is the "YAVIS: young, attractive (and perhaps anxious, or at least in some pain), verbal, intelligent, and successful. If the YAVIS is a female, so much the better. The client least likely to benefit is the HOUND: homely, old, unattractive, nonverbal, and dumb" (p. 489).

While it might be assumed that college faculty are generally secure, self-confident people, teaching seems to be a sensitive and personal matter. While faculty are eager to circulate their latest publication, or even first drafts, to colleagues across the nation, 42 percent of the Nebraska teaching faculty, which I judged quite typical in most respects, would be "quite hesitant" or would "object" to having colleagues visit their classes (Cross, 1977). I might observe that most people feel insecure about a public display of skills for which they have been given no training -- even if they have watched others teach all their lives.

5. Since attention in the first sessions of video playback is usually given to an intense focus on self -- voice, appearance, and mannerisms -- the more productive playbacks are likely to occur in second and third sessions where attention can be directed to teaching behaviors.

Given the potential of using feedback from oneself to improve performance, the idea of self-assessment through the use of technology is appealing, but it probably needs more research and more thoughtful analysis of what it can and cannot do and how its use can be maximally beneficial.

Conclusions

The advocates of assessment hope it will make a difference. The essential assumption behind that hope is that if we have an accurate assessment of students' learning, we can act to improve the quality of education. It is not an unreasonable assumption, but it is an unexamined one.

This paper is, in one sense, a mini-evaluation of the assumption underlying assessment. This review concerns small-scale assessments, specifically the assessment of teaching in the classroom. Over the years, we have amassed considerable research about the response of teachers to feedback about their teaching. We have some information about who can provide useful feedback, what kind of feedback seems most helpful, and whether educators (in this case, teachers) change as a result of feedback. All of these issues are relevant to the larger-scale assessments that are so popular today. Although I hope this review of the research will be helpful in designing and improving large-scale assessment programs, that is not why I wrote this paper.

I wrote it because of my growing conviction that assessment is taking place too far from the scene of the action. Once we get the information from institutional and statewide assessments, we are going to have to figure out how to use it to improve education. The consistent experience in education is that a huge gap exists between research and its eventual use to improve practice. The leap from "research" to "development" is often so great that people cannot make it easily. We may find a similar chasm between assessment and the improvement of education.

An alternative strategy to current models of assessment is to start on the side of the chasm where we would like to see change, thus making the leap between assessment and practice less formidable. Since faculty members are the designated guardians of standards and quality, it is they who should be doing the assessments, and it is they who will have to make the changes in curriculum and instruction.

My particular attention in this paper has been directed to the uses of assessment to improve instruction. Changing instruction is usually considered more difficult and intractable than changing the curriculum. While changes in the curriculum are revisited with the regularity of seven-year locusts, instructional improvement has received only sporadic attention. Yet what happens when teachers meet students in the classroom lies at the heart of educational quality.

One of the most encouraging findings that turned up in this review was reported by Cohen (1980). In a meta-analysis of 22 research studies investigating the power of feedback from student ratings to improve instruction, he found that relatively small improvements made by individual instructors added up to very substantial improvement. He concluded that the typical instructor, utilizing feedback from students (in consultation with a consultant on teaching improvement), raised his or her ratings from the 50th to the 75th percentile by the end of the semester. It would be hard to think of any policy resulting from large-scale assessments that would bring about that amount of change is so brief a period of time. Granted, the improvement was in students' perceptions of instruction, but my review of the extensive amount of research that has been done on the reliability and validity of student ratings is quite positive. Students are one good source of information about the quality of instruction that is delivered in their classrooms.

Although the current assessment movement rests on the assumption that learning <u>outcomes</u> are the truly valid indicators of the quality of education, relatively little research has been done on whether teachers change as a result of receiving information about student performance on tests and other measures of student achievement. Further investigation of this question is essential for the assessment movement generally, and it is crucial for the concept of classroom research.

My assumption in proposing classroom research is that if teachers engage in continuous assessment of what students are learning in their classrooms, teachers can then experiment and develop more effective teaching strategies. That remains to be seen. But a first step is to help classroom teachers conduct assessments of students' learning in their own disciplines, with the type of students they teach, and on matters that are relevant to their teaching goals. Then we need to find out if and how teachers respond to such assessment information.

In conclusion, the purpose of any assessment is to improve the quality of education. My argument in the review and interpretations presented in this paper is not necessarily to replace the current emphases on large-scale assessments with classroom assessments, but to offer a promising alternative to the efforts already underway.

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